

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

- 1 1. (Previously presented) A method of forming a peptide conjugate comprising a covalent
2 linkage between a modifying group and a glycosylated or non-glycosylated peptide, wherein said
3 modifying group is conjugated to the peptide via a glycosyl linking group interposed between
4 and covalently linked to both said peptide and said modifying group, said method comprising:
5 a. contacting a cell with a modified sugar comprising a sialic acid moiety
6 covalently functionalized with at least one modifying group, wherein said at least one modifying
7 group is a water-soluble polymer;
8 b. incubating said cell under conditions in which said cell internalizes said
9 modified sugar;
10 c. after step b, intracellularly contacting said modified sugar with a glycosylated
11 or non-glycosylated peptide and a glycosyltransferase for which said modified sugar is a
12 substrate, thereby forming said peptide conjugate.
- 1 2. (Original) The method of claim 1, further comprising, after step b and before step c,
2 intracellularly contacting said modified sugar with a nucleotide and a nucleotidyl transferase,
3 thereby forming a modified nucleotide sugar, wherein
4 said modified sugar in step c is said modified nucleotide sugar.
- 1 3. (Original) The method of claim 1, further comprising isolating said peptide conjugate.
- 1 4. (Original) The method of claim 1, wherein said modified sugar is a modified nucleotide
2 sugar.

5. (Original) The method of claim 1, wherein said modified sugar is a modified activated sugar.

6. (Original) The method of claim 1, wherein said glycosyl linking group is an intact glycosyl linking group.

7. (Original) The method of claim 1, wherein said modified sugar is a precursor modified sugar that is intracellularly converted to an intermediate modified sugar by cellular enzymes after step b and before step c.

8. (Original) The method of claim 7, wherein said intermediate modified sugar is a phosphorylated modified sugar, wherein said phosphorylated modified sugar is formed by intracellularly contacting said modified sugar with a kinase for which said modified sugar is a substrate, thereby forming a phosphorylated modified nucleotide sugar.

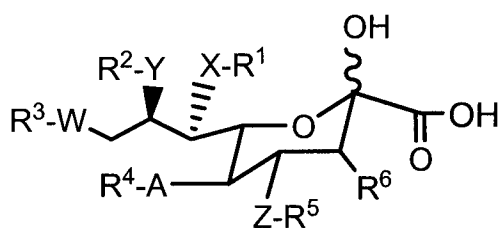
9. (Original) The method of claim 1, wherein said water-soluble polymer comprises poly(ethylene glycol).

10. (Original) The method of claim 10, wherein said poly(ethylene glycol) has a molecular weight distribution that is essentially homodisperse.

11. (Canceled)

12. (Canceled)

13. (Previously presented) The method of claim 1, wherein said modified sugar has the formula

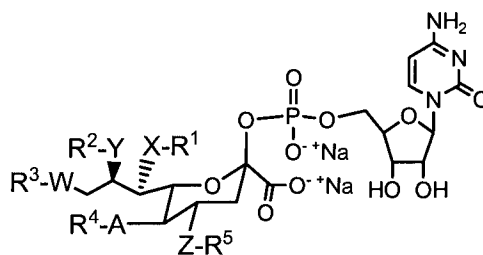


wherein,

W, X, Y, Z, and A are members independently selected from a bond, substituted or unsubstituted alkylene, substituted or unsubstituted heteroalkylene, substituted or unsubstituted cycloalkylene, substituted or unsubstituted heterocycloalkylene, substituted or unsubstituted arylene, substituted or unsubstituted heteroarylene, -O-, -N(R⁷)-, -S-, and -CH₂-, wherein, R⁷ is a member independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, and substituted or unsubstituted heteroaryl; and R¹, R², R³, R⁴, R⁵ and R⁶ are members independently selected from -OH, -NH₂, -SH, hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, and a water-soluble polymer, wherein at least one or R¹, R², R³, R⁴, R⁵ and R⁶ is said water-soluble polymer.

14. (Canceled)

15. (Previously presented) The method of claim 2, wherein said modified nucleotide sugar has the formula



(III)

wherein,

W, X, Y, Z, and A are members independently selected from a bond, substituted or unsubstituted alkylene, substituted or unsubstituted heteroalkylene, substituted or unsubstituted cycloalkylene, substituted or unsubstituted

heterocycloalkylene, substituted or unsubstituted arylene, substituted or unsubstituted heteroarylene, -O-, -N(R⁷)-, -S-, and -CH₂-, wherein, R⁷ is a member independently selected from hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, and substituted or unsubstituted heteroaryl; and R¹, R², R³, R⁴, and R⁵ are independently selected from -OH, -NH₂, -SH, hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, substituted or unsubstituted heteroaryl, and a water-soluble polymer, wherein at least one or R¹, R², R³, R⁴, and R⁵ is said water-soluble polymer.

16. (Canceled)

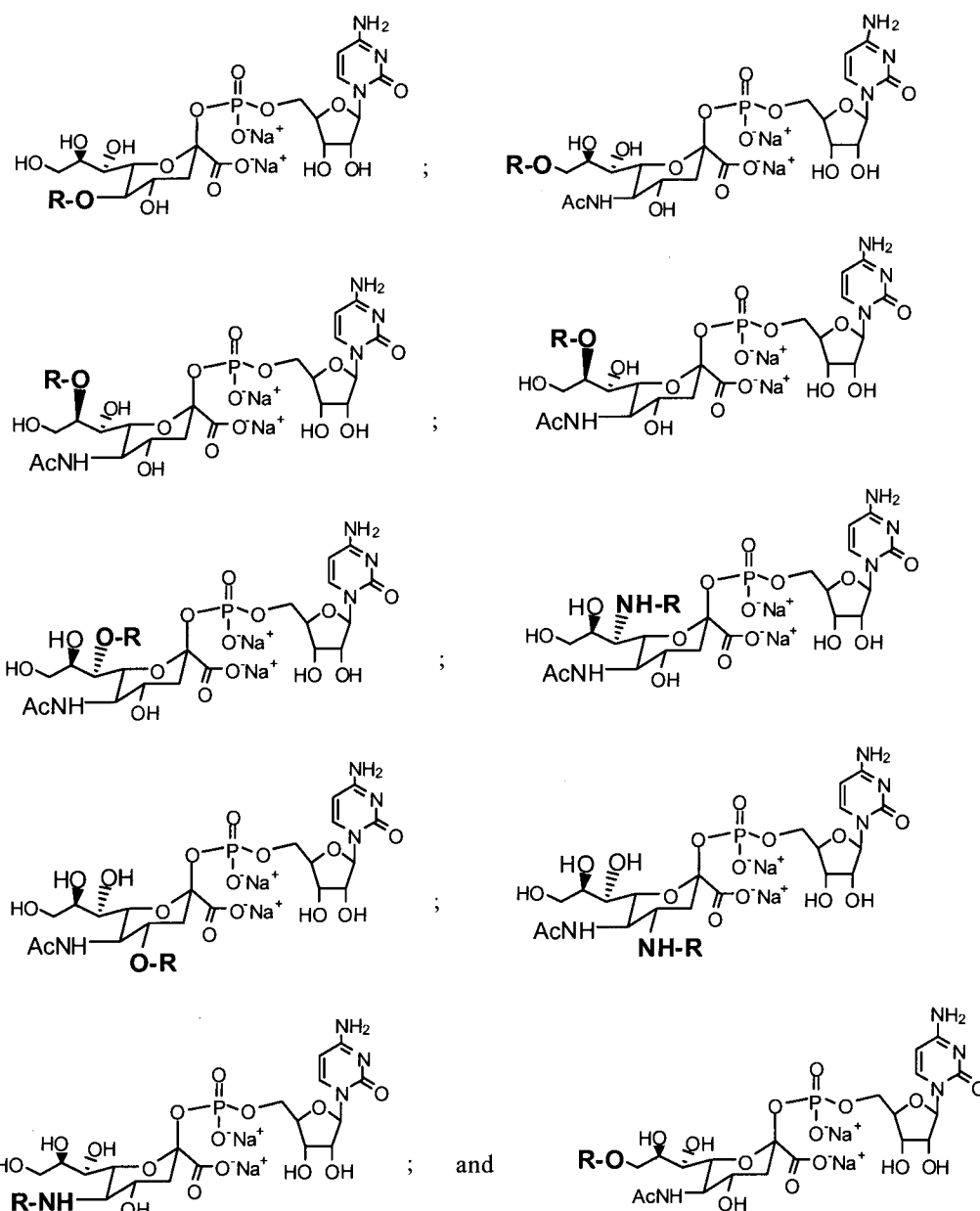
17. (Original) The method of claim 1, wherein said peptide is selected from the group consisting of granulocyte colony stimulating factor, interferon-alpha, interferon-beta, Factor VIIa, Factor IX, follicle stimulating hormone, erythropoietin, granulocyte macrophage colony stimulating factor, interferon-gamma, alpha-1-protease inhibitor, glucocerebrosidase, tissue plasminogen activator protein, interleukin-2, Factor VIII, chimeric tumor necrosis factor receptor, urokinase, chimeric anti-glycoprotein IIb/IIIa antibody, chimeric anti-HER2 antibody, chimeric anti-respiratory syncytial virus antibody, chimeric anti-CD20 antibody, DNase, chimeric anti-tumor necrosis factor antibody, human insulin, hepatitis B sAg, interferon-omega, alpha-galactosidase A, alpha-iduronidase, anti-thrombin III, human chorionic gonadotropin, and human growth hormone.

18. (Withdrawn) A cell comprising a peptide conjugate, said peptide conjugate comprising:
(i) a modifying group and a peptide, wherein said modifying group is linked to said peptide via a glycosyl linking group interposed between and covalently linked to both the peptide and said modifying group; and

(ii) said modifying group is a member independently selected from the group consisting of a water-soluble polymer, a therapeutic moiety, a detectable label, and a targeting moiety.

19. (Withdrawn) The method of claim 18, wherein said glycosyl linking group is an intact glycosyl linking group.

20. (Previously presented) The method according to claim 2, said modified nucleotide sugar having a formula which is a member selected from:



wherein

R is said water-soluble polymer.

21. (Previously presented) The method according to claim 1 wherein said water-soluble polymer is a poly(alkylene oxide) selected from linear poly(alkylene oxide) and branched poly(alkylene oxide).

22. (Previously presented) The method according to claim 20 wherein said water-soluble polymer is a poly(alkylene oxide) selected from linear poly(alkylene oxide) and branched poly(alkylene oxide).

23. (Previously presented) The method according to claim 1 wherein said modified sugar has the formula:

